

THE BEAN BAG

Current Research on Legumes

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FROM THE EDITORS. Again our task of assembling a number of the BB has been greatly lightened by the readership, and we are grateful. We have received information for BB-3 from over forty people via the forms, in letters, and in person. We appreciate your comments and the personal greetings too---so, many thanks! Keep the cards and letters coming but especially the data forms (new, shorter edition enclosed).

One reader asked that we use scientific names for plants, especially in the literature-cited section. He referred to the note on the winged-bean in BB-2; it is *Psophocarpus tetragonolobus* (L.) DC. We certainly agree and apologize for the oversight.

Another writer asked why we omit titles in the lists of readers. We recognize it would make it easier to correctly address each other in correspondence but including titles would be a burden we had not thought worth adding to our understaffed (we are it!) offices. There are a fair number of possible titles, and changes do occur occasionally. To keep abreast of all this seemed a less high priority than the substance of each number. However, if we have sufficient demand we could issue a membership list at the end of the year with titles. But this would mean that each person would have to return a data form with their preferred title indicated.

At the international level: (1) Howard Irwin writes of USSR-USA bi-national exchange expeditions, coordinated from the US side by the Department of the Interior. (2) Brazilian botanists with their Research Council have begun a Projeto Flora project in Amazonia and have discussed possible cooperation with US taxonomists and ecologists. (3) Those who have used F.A. Stafleu's *TAXONOMIC LITERATURE* (1967) will be pleased to know a second edition is being prepared by him and R.S. Cowan. The first volume of four, treating authors with surnames beginning with letters "A" to "G" will be available 1 November. (4) Plans for The International Conference on Legumes scheduled for 1978 are developing well; a recent announcement will be found below.

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INTERNATIONAL CONFERENCE ON LEGUMES. Since the first notice in BB-2, there has been a tremendous response to this collaborative project and even wider

participation is invited. The conference, sponsored by the Royal Botanic Gardens, Kew and the Missouri Botanical Garden, is scheduled for 24-29 July 1978 (with some extension for special meetings) at Kew. The principal objective of the botanical programme is to prepare an improved and revised classification of the family at generic and tribal levels from a synthesis of diverse evidence.

On the botanical side the following co-ordinators have been named.

Co-ordinators for subfamilies: Caesalpinioideae - R.S. Cowan; Mimosoideae - J.P.M. Brenan & T.S. Elias; Papilionoideae - R.M. Polhill.

Co-ordinators for special aspects: Chemistry - E.A. Bell; chromosomes - P.H. Raven; pollen - A. Graham (Caesalpinioideae + Phaseoleae), I.K. Ferguson & J.J. Skvarla (Papilionoideae) and P. Guinet (Mimosoideae); seed morphology and anatomy - C.R. Gunn & N.R. Lersten; seedlings - J.A. Duke; wood anatomy - T. Baretta-Kuipers.

Other contributions have been offered on extra-floral nectaries (T.S. Elias, J.K. Maheshwari), root nodulation (H.D.L. Corby), transfer cells (B. Gunning & L. Watson), sieve-element plastids (H.-D. Bohnke), host ranges of viruses (K. Bock), as well as diverse chemical aspects.

Special sessions are envisaged for critical generic groups and working parties are beginning to collate views and data towards the presentation of reasonable alternative systems if not a consensus opinion. The following contacts may be useful: Ingeae - T.S. Elias, L.I. Nevling & I. Nielson; Cerceae - K. Larsen, R. P. Wunderlin; Cassia - R.G. Barneby, H.S. Irwin; Sophoreae - V.E. Rudd, G. Yakovlev; Millettia-Derris group - R. Geesink; Phaseoleae - J.A. Lackey; Phaseolineae - R. Marechal; Desmodieae - B.G. Schubert, H. Ohashi; Vicieae C.R. Gunn, F. Kupicha; Genisteae - F.A. Bisby.

On the agronomic side a collaborative effort towards a manual of legume crops is envisaged, with data from many sources on the evolution and domestication of edible and forage legumes, their morphology, distribution, ecology, husbandry and nutritive value, with key bibliography and a directory of current breeding and introduction programmes. Some emphasis will be given to possibilities of crop diversification and potential new crops, and some bias made to tropical and third world problems. Some aspects will be collated into more general review papers. Initial response is encouraging, but the scope and organisational detail has still to be worked out. A special agronomic meeting is planned to precede or follow closely the main conference.

The programme of the general conference remains flexible, but is likely to comprise an introductory day of "overviews" of the subfamilies (an illustrated guide to the morphology, distribution, tribal classification and possible evolution), a day of reviews on chemistry (contingency exists for a special Phytochemical Society meeting prior to the main conference), a day on other special aspects (pollen, seeds, seedlings, wood, etc), two days on critical groups (with some emphasis on groups of agronomic interest) and a final day on reproductive biology, defense mechanisms, phytogeography and summing up. To achieve this scope the information will be presented as a series of reviews, with enough discussion time for other participants to contribute. The proceedings should be readable synopses of current views with key bibliography. The detailed work will be published elsewhere as appropriate. The conference, limited to 150(-200) people, should be seen as a focus for a wide common endeavour which already manifests a most stimulating collaborative spirit and which seems unlikely to stop at that point!

The organisers would like to thank the many contributors to the now sizeable Krukoff Seed Collection and to indicate that further accessions are still much desired (see BB-2).

J.P.M. Brenan, R.M. Polhill & P.H. Raven

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ADDITIONS TO BEAN BAG READERSHIP. (Please save this list as well as those in BB-1 and BB-2 for your future use.)

BARETTA-KUIPERS, T., Instituut voor Systematische Plantkunde, Univ. of Utrecht, Tweede Transitorium, Uithof, Utrecht, The Netherlands (Wood anatomy of tropical legumes).

BEHNKE, H.D., Lehrstuhl für Zellenlehre, Universität der Heidelberg, 6900 Heidelberg 1, West Germany (Sieve-element plastids).

BISBY, F.A. Department of Biological Sciences, Bldg. 44, University of Southampton, Southampton SO9 5NH, England (Genisteae).

BOCK, D.R. E.A.A.F.R.O., Box 30148, Nairobi, Kenya (Host-ranges of viruses).

BRAVO, L. Departamento de Ciencias Biológicas Facultad de Ciencias Exactas y Naturales Intendente Griraldes 2620. Suc. 28 1428 Buenos Aires, Argentina.

BURTON, J. The Nitrogin Co. 3101 West Custer Street, Milwaukee, WI 53209 USA. (Rhizobium).

FERGUSON, I.K. Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, England (Pollen, particularly of Papilionoideae).

GIBBS, P.E. Departamento de Morfologia e Sistemática Vegetais, Instituto de Biologia de UNICAMP, Cx. Pos. 1170, Campinas, 13.100, S.P., Brazil (Agronomically important legumes of Brazil).

GILLETT, J.B. East African Herbarium, Box 45166, Nairobi, Kenya (African Papilionoideae).

HARDAS, W.H. Division of Plant Introduction, Indian Agricultural Research Institute, New Delhi-Pin, 110012 India.

KOLSTAD, O.A. Biology Department, Kearney State College, Kearney, NB. 68847 USA.

KUPICHA, F. Botany Department, British Museum-Natural History, Cromwell Road, London SW7 5BD, England (Vicieae).

LA SOTA, L. 1609 Ripon Place, Alexandria, Va. 22302 USA. (Horticultural legume seeds).

LOVELL, G. SCS Plant Materials Center, Building 509, BARC East, Beltsville, Maryland 20705 USA. (Legumes for conservation uses; has a seed exchange program).

MCNEILL, J. Research Branch, Biosystematics Research Institute, Saunders Building C.E.F., Ottawa, Ontario, K1A 0C6 Canada.

MARECHAL, R. Faculte des Sciences Agronomiques de l'Etat, 5000 Gembloux, Belgium (Phaseolinae).

MARTINEZ, S. Departamento de Ciencias Biologicas Facultad de Ciencias Exactas y Naturales Intendente Griraldes 2620. Suc. 28 1428 Buenos Aires, Argentina.

MENNEGA, A.M.W. Instituut voor Systematische Plantkunde, Univ. of Utrecht, Tweede Transitorium, Uithof, Utrecht, The Netherlands (Wood anatomy of tropical trees).

PALACIOS, R. Departamento de Ciencias Biologicas Facultad de Ciencias Exactas y Naturales Intendente Griraldes 2620. Suc. 28. 1428 Buenos Aires, Argentina.

PARADINE, P.J. 18 Exmoor Crescent, Worthing, Sussex BN13 2PN, England (Seed -fruit artist).

REMBERT, Jr., D. Department of Biology, University of South Carolina, Columbia, South Carolina, 29208 USA. (Ovule development in legumes by SEM).

WEBER, D.F. Room 315, CCNF Lab, Building 001, ARS, USDA, Beltsville, Maryland 20705 USA (Rhizobium).

WEDER, J.K.P. Institute fur Lebensmittelchemie, Technische Universitat Munchen, 8 Munchen 2, Lothstrasse 17, West Germany.

WESTPHAL, E. B.P. 138, Yaounde, Cameroon (Agronomy in Cameroon and Ethiopia).

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CHANGE OF ADDRESSES - Record these changes in BB-1 or BB-2 as indicated after the address.

EL-GAZZAR, A. The Herbarium, Botany Department, Faculty of Science, Cairo University, Giza, Egypt. (BB-1).

JANZEN, D.H. Department of Biology, University of Pennsylvania, Philadelphia, Pennsylvania 19104 USA (use after July 1, 1976). (BB-1).

LEE, E. c/o Flat 1118, 47 Kam Hong Street, North Point, Hong Kong (BB-1).

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IDENTIFICATIONS. Following are names of specialists who have expressed willingness to identify legumes and groups they will accept. Arrangements should be made directly with them, in advance of shipment, using addresses in BB-1/2/3.

BRETELER. Abrus and Leucaena.

CARTER. Cercidium of SW US and NW Mexico.

CRISTOFOLINI. Cytisus, Genista and other European Genisteae.

DE WIT. Parkia.

GILL. Crotolaria.

CORDON. Cassia, South African species.

GREAR. Eriosema, Rhynchosia (New World only).
GUINET. Can provide assistance concerning pollen morphology of the Leguminosae, especially subfamilies Mimosoideae & Caesalpinioideae.
HANELT. Vicia.
IRWIN. Cassia generally; American Mimosa.
JANZEN. Legumes of Guanacaste Province (deciduous forest), Costa Rica (more natural history knowledge than taxonomy), ant-acacias of the New World.
KUZMANOV. Genista, Vicia.
LANGENHEIM. Hymenaea.
LEE. Hymenaea, Gleditsia, Gymnocladus, & Chinese caesalpiniceous plants.
MEYER. Mucuna.
POLHILL. Crotalaria of Africa and Madagascar.
SILVA. Peltogyne.
STIRTON. Eriosema of S. Africa.
VIDAL. Pterolobium and Asiatic Caesalpinia.

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GLEANINGS FROM DATA COLLECTING SHEETS. For addresses see readers lists in BB-1 with supplements in BB-2 and BB-3.

BARNEBY see IRWIN.

BURTON is expanding the Nitrogen rhizobia collection and seeks collaboration with colleagues who have access to non-US legume nodules (3-4 nodules preserved in screw cap glass vials + 2/3 full of silica gel) and will provide list of available effective strains in exchange.

CAKLER will return irregularly to southern Baja California (Mexico) north of La Paz and can collect herbarium material, seeds, or buds for chromosomes study.

CORBY has made two valuable contacts through the BB (ED. note: we appreciate knowing about this), is seeking viable legume seeds and associated rhizospore soil for nodule-shape study (write for details), has seeds of many species to exchange.

COWAN has published revisions or monographs of Eperua and Heterostemon; Elizabetha in press; starting systematic study of Tachigalia and Sclerolobium.

CRISTOPOLINI in his continuing research on serological taxonomy of Genisteae has completed a revision of Cytisus section Tubocytisus, needs seeds or young plants of C. hirsutus-supinus, offers seeds of several Genisteae and will look for legume seeds (or plants) from NE Italy or NW Yugoslavia.

DEWIT reports that VAN DER MAESEN (Wageningen, Netherlands) has started on a study of Atylosia and Cajanus.

DUDIK has completed a study of the morphology and evolution of seeds and fruits of 62 Ukrainian legume genera; is starting on a similar study of legume seeds from species that possess medicinal value and desires such material especially from Australia, California, Mexico, Rhodesia, and South America; considers that a seed-fruit study of Astragalus would be interesting, especially phylogenetically; and has extra Ukrainian legume seeds and fruits (be specific in your requests).

EL-GAZZAR has studied the taxonomic significance of susceptibility to Uromyces rusts and the distribution of alkaloids, flavonoids, and canavanine in legumes. Two groups emerged: the mimosoids and caesalpinoids in one, and the papilionoids (plus the Swartzieae) in the other. The two groups are in agreement with available information on seed morphology and anatomy. Submitted for publication in Botaniska Notiser. With Afaf A. Badawi, and M.A.F. El Fiki will study the phylogenetic significance of chromosome numbers in legumes and would like Senn, H.A., 1938, Chromosome number relationship in the Leguminosae, Bibliographia Genetica 12: 175-337. Offers specimens of Egyptian and Arabian legumes.

GILL is studying the cytosystematics of Tanzanian Papilionaceae and would like to exchange seeds and flower buds preserved in 70% alcohol.

GORDON-GRAY has completed a study of inflorescences of some Natal Acacia spp. (section Gummiferae) to determine if a gradient exists from bisexuality to unisexuality of florets in a capitate head on individual plants, from commencement to end of flowering season. Also completed a revision of Cassia for Flora of South Africa. Suggests that South African Indigofera would make a good research project for a graduate student because of variability and possible relationship between this variability and edaphic factors. Would like Cassia herbarium specimens for teaching.

GREAR with N.G. Dengler has completed an ontogenetic study of the seed appendage of Eriosema.

GUINET with Salard-Cheboldaeff has completed a study of fossil Mimosoideae pollen from Cameroon and with VASSAL has completed a study of evolution of Acacia. Has started study of fine structure of exine of Acacia, mimosoid pollen of Madagascar, and of some groups of Australian Acacia (with MASLIN and VASSAL). Was awarded 1975 Auguste Chevalier prize by Academy of Sciences for his research in tropics.

GUNN has been joined by LA SOTA and PARADINE in study of legume fruits and seeds.

HANELT has finished screening Vicia faba collection for protein content and started a study of Slovakian leguminous crop plants. Recommends a study to determine the relationship of Cicer in Vicieae. Welcomes seeds of wild Mediterranean Lupinus and offers seeds of cultivated temperate legumes. Will collect local legume seeds and herbarium specimens.

IRWIN and BARNEBY have completed a revision of Cassia Sect. Absus and Sect. Grimaldia and starting on American spp. of section Chamaecrista. Wants collaborators for obtaining seed with voucher herbarium sheets (deposited at NY or elsewhere) with collectors being acknowledged if used and shipping expenses reimbursed. Suggests that the naturalness of Galactia should be examined; basis for distinguishing Phaseolus and Vigna; Arachis is still a puzzle biologically and taxonomically; Zornia and Stylosanthes should be re-examined; Clitoria and Mucuna are ripe for revision. Offers viable Cassia seeds and available assistance for field work.

ISELY see PALMER

JANZEN has completed a study of the effect of seed-damage in Mucuna andreana and seedling ability to withstand herbivory (Ecology, in press); field mapping of two seed shadows of Andira inermis in Costa Rica (submitted to Ecology); short paper in Science on reproductive biology of Hymenaea courbaril; short paper on the adaptive significance of lectins in legume seeds, submitted to Science. Has started on an ecological characterization of the bruchid beetles (and other seed predators) in a Costa Rican deciduous forest. Needs Rhinochenus weevils reared from non-Costa Rican Hymenaea fruits. Can provide Costa Rican seed of H. courbaril.

KUZMANOV has completed a cytotaxonomic study of Bulgarian legumes and plans to expand study to southern Europe, Mediterranean, and Asia Minor. Wants viable legume seeds with voucher deposited in herbarium and will exchange Bulgarian legumes.

LACKEY see PALMER.

LANGENHEIM completed study of relationship of photoperiod on resin composition of Hymenaea courbaril and is starting on a comparative study of variation in resin composition in stems and leaves of Hymenaea spp. as well as study of herbivore pressures on leaf systems in Hymenaea to determine if it is a defensive mechanism. Is interested in obtaining viable vouchered seeds and ecological data for Copaifera spp. (See entry for STIRTON infra!).

LARSEN, S.S. has completed a study of pollen of Thai Bauhinia spp.

LA SOTA see GUNN.

LASSETTER is planning to study the relationships of Vicia acutifolia - floridana-ocalensis and desires seeds of these as well as V. leucophaea.

LEE has completed studies of Gleditsia and Gymnocladus, plans to study caesalpinjiaceous species of Hong Kong, wants fruits of any species of Gleditsia and Gymnocladus that should be air-dried and sent to R.M. Parkhurst, Stanford Research Institute, Menlo Park, Calif. 94025, USA.

MASLIN see GUINET.

MEIJER has returned from Bali and the Celebes. Plans to work on New Guinea Mucuna spp. and seeking Mucuna spp. especially ripe fruits and flowers throughout its range; has legumes from Indonesia for exchange, and will be in Java, Bali, Celebes, Borneo and Sumatra in summer of 1976.

NOZZOLILLO is on sabbatical and working on anthocyanins in Vicia seedlings and desires additional viable seeds.

PALMER wants viable seeds of Glycine for a study with ISELY and LACKEY on the possible expansion of gene pool of G. max. with aim to transfer desirable traits from the Glycine spp. to G. max.

PARADINE see GUNN.

REMBERT has completed a study of ovularian pollen chamber in Trifolium repens.

SALEH has completed a study of the effect of anthocyanins on color variation in selected legume flowers and is starting on a chemosystematic study of status of Medicago (Trigonella?) radiata with L. Boulos and welcomes leaves, stems, seeds, or herbarium specimens of Medicago and Trigonella. Received the Alexander von Humboldt Fellowship of study in West Germany.

SCHULTES suggests study of components of root of Mimosa hostilis and notes that medicinal legumes of NW Amazon need study.

SILVA has revised Peltogyne, plans a biosystematic study of Dimorphandra, and is looking for collaborators to develop selected Amazonian taxonomy and floral biology studies. Wants bibliographic material, type photos, and herbarium sheets (write for details) in exchange for Amazonian collections and plans to be collecting this year in the Amazon. Recently received Master of Science degree in Tropical Botany.

STIRTON, now Senior Professional Officer, plans to revise subtribe Cajaneae for South Africa, is looking for collaborator on study of xerophotic movement of leaflets of Phaseoleae under intense sunlight (write for details), and suggests study of Copaifera and Guibourtia fruit morphology and dispersal, arillate vs. non-arillate seeds important. (LANGENHEIM note!). Can collect seed & take photos if film, processing and postage are paid.

THOTHATHRI has completed a taxonomic study of tribe Dalbergieae in India and adjacent countries; has started on Sophoreae for Flora of India; wants tropical legume flowers and fruits preserved FAA and can do local collecting.

VAN DER MAESEN (Wageningen, Netherlands) has started on a study of Atylosia and Cajanus.

VASSAL see GUINET.

VIDAL has revised Erythrophleum, Gymnocladus, Gleditsia and Lysidice for Indochina and Thailand and plans to do same for Dialium, Crudia and Saraca.

VERDCOURT has begun preparation of manual on legumes of "Papuasia" by survey of materials at Kew and Lae--financed by Commonwealth Fund for Technical Cooperation.

WEDER has isolated and characterized trypsin and chymotrypsin inhibitors from seeds of Phaseolus coccineus and P. vulgaris var. nanus and will do same for economically important legumes.

WILBUR has started on Leguminosae for Burger's Flora Costaricensis and will be in Costa Rica 6-10 months during next three years.

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RECENT (POST 1972) LEGUME LITERATURE. When preparing a citation of your published legume paper or legume papers of general interest, please follow the form used in this BB. Use additional key words when needed to supplement the title. Major publications may have brief reviews. For additional information or reprints write to the author or authors whose names are fully capitalized. Their addresses may be found in BB-1, 2, or 3.

ARROYO. 1976. The Systematics of the legume genus Harpalyce (Leguminosae: Lotoideae). Memoirs New York Bot. Gard. 26(4): 1-80.

Ayenu, E.S., SCHULTES, et al. 1975. Underexploited tropical plants with promising economic value. National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C. 20418, USA. 188 pages, free. 36 genera treated and illustrated: Acacia albidia, Cassia sturtii, Cyanopsis tetragonoloba, Psophocarpus tetragonolobus.

BARETTA-KUIPERS. 1973. Some aspects of wood-anatomical research in the genus Inga (Mimosaceae) from the Guianas and especially Suriname. Acta Bot. Neerl. 22: 193-205. 35 of 38 Inga spp. included in wood key.

Brouwer, W. and A. Stahlin. 1975. Handbuch der Samenkunde. DLG-Verlag, Rusterstrasse 13, D-6000 Frankfurt (Main) 1, Germany. 655 pp., \$ 74.00 or DM 180. A reprint of the 1955 edition. About 70 legume genera.

Buss, P.A., Jr., and LERSTEN. 1975. Survey of tapetal nuclear number as a taxonomic character in Leguminosae. Botanical Gazette 136: 388-395. Tapetum in Caesalpinoideae: Multinucleate. Tapetum in Mimosoideae, Papilionoideae: Uninucleate.

Clarke, G.C.S. and KUPICHA. 1976. The relationships of the genus Cicer L. (Leguminosae): the evidence from pollen morphology. Bot. J. Linn. Soc. 72: 35-44. 4 plates. From a pollen morphology standpoint tribe Viciae without Cicer is very homogenous. Cicer pollen has more in common with Ononoideae.

Corner, E.J.H. 1976. The seeds of dicotyledon, vol. 1, \$ 39.50 and vol. 2, \$ 65.00. Cambridge University Press, 32 East 57th Street, New York, New York 10022, USA; Bentley House, 200 Euston Road, London NW1 2DB, England; or 296 Beaconfield Parade, Middle Park, Melbourne 3206, Australia. From seeds came the angiosperms and the anthophytes. Emphases on seed anatomy and plant phylogeny with excellent line drawings. Little data on seed identification. Tropical seeds featured, 28 legume plates. Encyclopedic.

COOMAN. 1975. Brachycylix, A new genus of tropical Leguminosae (Caesalpinoideae). Proc. Roy. Netherlands Acad. Arts & Sci. Series C, 78: 464-467.

- _____. 1976. A taxonomic revision of the genus Heterostemon (Leguminosae-Caesalpinioideae). Proc. Roy. Netherlands Acad. Arts & Sci. 79: 42-60.
- CRISTOFOLINI. 1975? Contributo preliminare alla sistematica di Chamaecytisus hirsutus e C. supinus. Giorn. Bot. Ital., 108(1-2): 55-73. English summary, 41 ref., 3 distrib. maps. The identity of these two taxa is discussed.
- _____. 1975. Systematics and evolution in the tribe Genisteae with emphasis on serological data. XII Internat. Bot. Congr. Abstracts vol. 1: 9. A discussion of determination of genera and systematic relationship among genera, based on immunodiffusion and principal component analysis and clustering.
- DUDIK and E.N. Kondratyuk. 1970. Fruit and seed atlas of Leguminosae of natural flora in the Ukrainian SSR. Naukova Dumka, Kiev, USSR. 215 pages, price unknown. Text in Ukrainian, Russian, English. Excellent illustrations.
- _____. 1973. Identification of seeds and fruits of legumes introduced to the Ukraine. Naukova Dumka, Kiev, USSR. Number of pages and price unknown.
- EL-GAZZAR. 1976. The main subdivisions of Leguminosae. Botaniska Notiser. In press. A restatement of de Candolle's Rectembriae and Curvembrae, 1825.
- GORDON-GRAY and Schorn, D.P.K. 1975. Studies in the genus Cassia in South Africa: 1. Taxonomic notes on species of the sub-genus Lasiorhema section Chamaecrista. J. S. Afr. Bot. 41 (3): 133-162. Seven species recorded: one new variety established. Key provided.
- _____. and Ward, C.J. 1975. A contribution to the knowledge of floral variation in Acacia karroo in eastern South Africa. Boissiera 24: 279-284. Coastal race with numerous sterile, staminodal, involucellate florets is recorded.
- GUINET and M. Salard-Cheboldaeff. 1975. Grains de pollen du Tertiaire du Cameroun pouvant etre rapportes aux Mimosaceae. Boissiera 24: 21-28. 3 new genera, 6 new species from Miocene sediments (Cameroun). Classification of pollen types attributed to Mimosoideae. Ecological significance of fossil species.
- GUNN, J.V. Dennis and PARADINE. 1976. World guide to tropical drift seeds and fruits. Quadrangle/The New York Times Book Co., 10 East 53rd Street, New York, New York 10022, USA. 240 pages, \$ 17.50. 20 legume genera, key, descriptions, excellent illustrations.
- HANELT and B. Fouquet. Merkmal svariabilitat bei Vicia faba L. I & II., Kulturpflanze 21: 56-60. Variability and combinations of characters and their frequencies.
- _____. Hammer. 1975. Bericht uber eine Reise nach Ostmähren und der Slowake zur Sammlung autochthoner Sippen von Kulturpflanzen. L.c., 23: 207-215. Cultivated leguminous crops, relic cultures.
- HUNZIKER, L. Poggio, C.A. Naranjo, PALACIOS. 1975. Cytogenetics of some species and natural hybrids in Prosopis (Leguminosae). Can. J. Genet. Cytol. 17: 253-262.
- ISELY. 1975. Leguminosae of the United States: II. Subfamily Caesalpinioideae. Mem. New York Botanical Garden 25(2): 1-288 & 84 maps. \$16.00. Second part of treatment of all native, established, and commonly cultivated legume species in continental U.S.: keys, descriptions, distributions, chromosome numbers, etc. Index to commonly used Caesalpinioideae names, 3 new taxa and 7 new combinations/names listed as addenda.
- LANGENHEIM, S. Martin, and E. Zavarin. 1974. Quantitative variation in leaf pocket resin composition in Hymenaea courbaril. Biochem. System. & Ecol. 3: 76-87.

- LEE and LANGENHEIM. 1975. Systematics of the genus Hymenaea L. (Leguminosae, Caesalpinioideae, Detarieae). University of California Press, Publications for Botany. 69: 1-190.
- _____. 1976. The genus Gymnocladus and its tropical affinity. J. Arnold Arbor. 57(1): in press.
- LEPPIK. 1972. Evolutionary specialization of rust fungi (Uredinales) on the Leguminosae. Ann. Bot. Fenn. 9:
- MARTINEZ. 1975. Estudio morfologico de las yemas axilares de algunas leguminosas lenosas de la Flora Argentina. Darwiniana 19: 458-489.
- PALACIOS and BRAVO. 1974. Estudio morfologico de las semillas de algunos "Prosopis" del Nordeste Argentino. Darwiniana 18: 437-452.
- _____. 1975. Estudio morfologico de las semillas de "Prosopis", II: Algunas especies Norte Americanas y neotropicales. Darwiniana 19: 357-372.
- PALMER. 1976. Soybean genetics newsletter 3: 1-86.
- POLHILL & SCHREIBER. 1975. Crotalaria virgultalis and allies in southern Africa. Mitt. Bot. Munchen 12: 167-180.
- REMBERT. 1973. Scanning electron microscopy of ovule ontogeny in Trifolium repens L. (Papilionaceae, Leguminales, Angiospermae). Bull. Assoc. Southeastern Biol. 20(2): 78. An abstract.
- _____. 1975. Megasporogenesis and early gametogenesis in Trifolium repens L. (Papilionaceae). Bull. Assoc. Southeastern Biol. 22(2): 74. An abstract.
- Robertson, K.R. and LEE. 1976. The genera in Caesalpinioideae (Leguminosae) in southeastern U.S. J. Arnold Arboretum. In press.
- RUDD. 1975. Nissolia chiapensis, a new species of Leguminosae from Mexico. Phytologia 31: 427-430. Includes a key to taxa of Nissolia.
- _____. 1975. Supplementary studies in Aeschynomene III: Series Scopariae in Mexico and Central America. Includes description of A. omocarpoides sp. nov. and key to series in Mexico and Central America.
- THOTHATHRI. 1972 (1975). Studies in Leguminosae 19. New dalbergias from the eastern Himalayas. Bull. Bot. Surv. India 14: 189-192. Dalbergia bhutanica Thoth. and D. duarensis Thoth. are described.
- _____. 1975. Studies in Leguminosae (20). Three new species of Dalbergia Linn. f. from Burma. J. Jap. Bot. 50(2): 52-58. Three new species of Dalbergia L. from Burma (D. pseudo-ovata Thoth., D. prainii Thoth., and D. peguensis Thoth. are described.
- VERDOURT and J.J. Synnott. 1975? The occurrence of Erythrina droogsmansiana (Leguminosae) in East Africa. Kew Bull. 30: 471-473. Two Erythrina species omitted from Flora of Tropical East Africa are identified as above.
- VIDAL & S. Hul Thol. 1976. Cesalpiniaceae asiaticae nouvelles. Adansonia (Paris) ser. 2, 15: 391-396, 2 pl. Two new species are described: Pterolobium sinense J.E. Vidal and Caesalpinia rhombifolia J.E. Vidal.
- WILBUR, R.L. 1975. A revision of the North American genus Amorpha (Leguminosae-Psoralaeae). Rhodora 77: 337-409.
- WEDER, J.K.P. 1975. Trypsin and chymotrypsin inhibitors in Leguminosae. V. Isolation and characterization of some inhibitors from Phaseolus coccineus. Chem. Mikrobiol. Technol. Legensm. 4: 79-84. Isolation of 5 of the 7 inhibitors, isoelectric points, amino acid compositions.

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